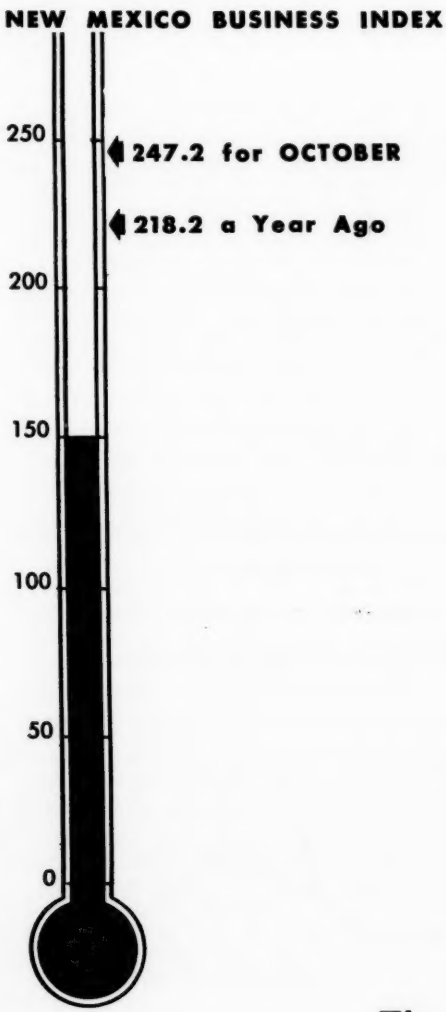
DECEMBER 1957

New Mexico BUSINESS



New Mexico business, usually experiencing a seasonal drop in October, continued to surge ahead in 1957, despite continued weakening in metals mining and cutbacks in planned residential construction.

Retail stores generally chalked up gains in sales contrary to the typical seasonal pattern, but the apparel and building material groups did not share in the gains. Sales of wholesalers also increased to attain a figure almost one-third greater than that a year earlier.

Sales of amusement establishments fell off from the all-time record set in September, but in comparison with October 1956 they were very markedly higher. Service establishments showed a substantial increase from September as well as from the year before.

One of the signs of weakness which has darkened the national business scene showed up in New Mexico. Although they were up from September, October's sales of manufacturers and processors (the measure of the state's industrial production most comparable to the Federal Reserve Board's index) dropped below year-ago levels for the sixth time during 1957.

(Continued on Page 11)

The Future of the Uranium Industry

The Present Status of the Atomic Power Industry

Factors Affecting the Future of the Uranium Industry

By A. V. Eardley and George Richard Hill

Can the future of the uranium mining and milling industry be analyzed on a quantitative basis? What is the future under existing Atomic Energy Commission (A.E.C.) schedules and pronouncements? What effect will uranium have on the conventional power producing industries? What can be done to avert the sudden end of a critically important industry at its peak? These are questions of vital concern to most everyone in the western uranium producing states, and to many people throughout the United States. An attempt is made in the following pages to answer them.

Production

Since 1949, production of ore from the Colorado Plateau, according to the A.E.C., has doubled each 18 months to 1955. The production in 1956 more than doubled that of 1955, and the last half of 1955 saw 40,000 tons produced. In the last six months of 1956, 1,660,000 tons were mined, and in the first six months of 1957 production amounted to 1,694,000 tons. It has been stated by the A.E.C. that the ore averages about 0.25 per cent U_3O_8. Thus it is possible to determine approximately the production curve from 1949 to the present. The milling program approved by the A.E.C., as announced in its Twenty-Second Semiannual Report, points toward a mill capacity of 14,000 tons of U_3O_8 per year by the end of 1958, and possibly 18,300 tons by the end of 1959. Changed to natural uranium this means 11,900 tons by the end of 1958 and 16,000 tons by the end of 1959. (See Chart 1.)

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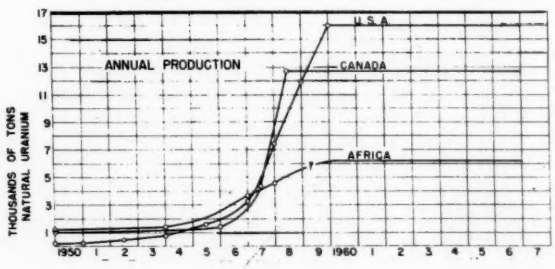
Chart 1

Uranium Production

U.S.A., Canada, & Africa



Canadian mill capacity will reach 14,000 to 15,000 tons of U_3O_8 (11,900 to 12,750 tons natural uranium) per year by mid-1958. Newspaper releases in the past two years permit the drawing of an approximate production curve in years past.

The U.S. has purchased much ore from Canada and if the amount was 50 per cent of its production, then the writers estimate that we will have received about 7,000 tons, in terms of natural uranium, up to the end of 1957. If our buying continues on a proportionate scale to their production, then by 1966 we will have purchased about 60,000 tons. It is guessed, however, that the amount purchased will be less because of our own large production, and hence a figure of 50,000 tons will be used in estimating our stockpiles.

The A.E.C. states that 4,400 tons of U_3O_8 were produced by Africa in 1956, and that 5,500 tons will be produced in 1957. These figures represent presumably both the Shinkolobowe operation in the Belgian Congo and those of the gold mining region of the Union of South Africa. Mill capacity at Shinkolobowe has not been announced, but if a 1,500 tons per day mill is assumed to have operated since 1950, then Africa's production would be about 1,200 tons of natural uranium per year from 1950 to about 1954 when production in the gold mining region began.

Jesse C. Johnson, head of the A.E.C.'s raw materials division, has said that 90 per cent of our uranium supply came from over seas (which means Shinkolobowe) when the atomic energy program began a few years ago. If this means nearly all of Africa's production then we would have received about 18,000 tons of natural uranium from them by the end of 1957. We will, no doubt, continue to purchase their concentrates, so that by 1966 we may have added about 50,000 tons from Africa to our own stockpile.

By the end of guaranteed price schedules the United States will have mined and milled the equivalent of about 128,000 tons of natural uranium, and will have purchased from Canada and Africa about 100,000 tons. This will give us a total stockpile of about 228,000 tons, minus amounts used by 1966.

Uranium Reserves

The following figures of reserves of uranium ore in the United States have been released by the Atomic Energy Commission. The tons of U_3O_8 and natural uranium in the ore are the writers' calculations.

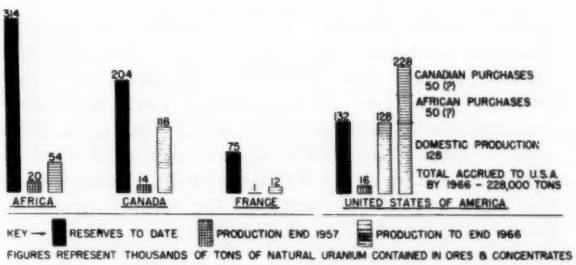
State	Tons of Ore	Tenor of Ore	Tons of U_3O_8
New Mexico	41,000,000	0.24%	98,000
Utah	7,500,000	0.34%	25,000
Colorado	4,100,000	0.33%	13,530
Arizona	2,600,000	0.30%	7,800
Wyoming	2,300,000	0.22%	5,060
Washington	1,500,000	0.18%	2,700
Others	1,000,000	0.20%	2,000
Total Tons of U_3O_8			155,000
Total Tons of Natural Uranium			132,000

Although this is a large reserve of uranium, exploration by a few companies is still being carried on vigorously and thus we may expect still more ore to be discovered before 1966.

Chart 2

Uranium Reserves, Cumulative Production

1957 & 1966



The Twenty-Second Semiannual Report of the A.E.C. credits Canada with 240,000 tons of U_3O_8, which is 204,000 tons of natural uranium. The report also lists a reserve of 314,000 tons of natural uranium for South Africa, and hence credits it with the world's largest reserve. Since it is rumored that the Shinkolobowe deposit is about mined out, the reserves are all credited by the

authors to the gold mining district. Also, France is credited with 75,000 tons of natural uranium reserves.

Thus, at the present time, known reserves of natural uranium contained in ores and concentrates available to the Free World total 725,000 tons. Chart 2 illustrates the distribution of the reserves, cumulative production to 1957, and the expected cumulated production of natural uranium by 1966.

Consumption of Uranium

The writers have little idea of the war needs of uranium and have little basis for the estimation of the kilograms of U^{235} required, but it must be considered a logical possibility in face of our large production and milling and processing facilities, plus the large amounts that have been received from Canada and Africa during and since the war, that in terms of ore production and concentrates they have been satiated since 1955. The stockpile which has and will accumulate since 1955 will be available for peaceful purposes and it is the future uses of this amount that we must attempt to analyze.

Electric power generating reactors promise to be the chief users of uranium. The amounts needed may be estimated by considering our power requirements. It is estimated by several writers that the total 1955 U. S. capacity was about 100 million kilowatts and that this will double in the next 15 years; and about the same percentage increases may hold for Canada and the rest of the world. These figures are presented to give a working basis for the possible demands in the next several decades on the nuclear fuels in generating electricity (Chart 3)

If we assume that all the increased demands for electricity in the U.S. in the next 15 years will be met by the construction of nuclear power reactors, and that the generative capacity of coal and hydroelectric plants will remain constant, then enough reactors will have to be built to produce 100 million kilowatts.

A study in 1955 by the A.E.C. concluded that by 1970 we may have a reactor capacity of 12 million kilowatts, by 1980, 42 million, and by 1990, 100 million kilowatts. (Speech by Jesse C. Johnson, February, 1955.) A recent paper by Kenneth W. Davis, Director of Reactor Development of the A.E.C. predicts the number of nuclear power generators which will be built in the United States as follows:

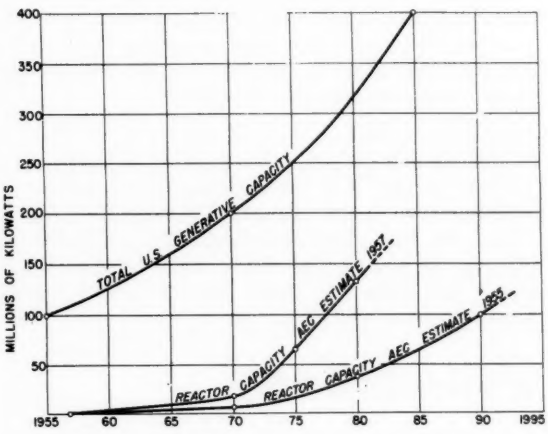
Period ending	Number of 100,000 kilowatt reactors installed
1956-60	8
1960-65	42
1966-70	186
1971-75	663
1976-80	1,373

By 1980, accordingly, the nuclear generative capacity of the United States would be 137.3 million kilowatts. The reactor capacity of these two A.E.C. estimates is shown on Chart 3. It, therefore, seems that the rate of building of nuclear generators will be within the range indicated by the two curves.

Now, the A.E.C. has released the information that its estimate of the amount of uranium neces-

Chart 3

Required Generative Capacity of U.S.A.; Amount Nuclear Reactors May Generate



sary to stock reactors having a generative capacity of 100 million kilowatts is about 60,000 tons of natural uranium. They also estimate that 5,000 tons of natural uranium will be needed each year to sustain the reactors of such capacity. This means that the U^{235} contained in 5,000 tons of natural uranium will be consumed each year in operating generators of 100 million kilowatts capacity.

The amount of U^{235} consumed is estimated by the writers as follows:

Premise - 1 MW day consumes 1.25 grams U^{235}
Therefore 1 MW year uses 460 grams or 0.460KgU^{235}
100,000 NW year (100 million KW year) would consume
46,000 KgU^{235} each year of 50.6 tons U^{235}
And 50.6 tons U^{235} is present in 7,100 tons U^{238}

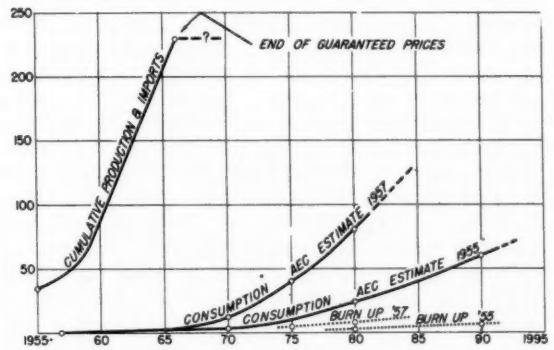
If the efficiency of the nuclear generator is assumed to be 25 per cent, and the operational time is 50 per cent, the annual requirements for U^{238} would be 2 times 7,100 tons or 14,200 tons. This is nearly three times the A.E.C. estimate, and it would seem to the writers that the matter of efficiency in power generation was not included in the A.E.C. estimate. If the A.E.C. figure assumed 100 per cent efficiency, then the disparity is small. The "burn up" curves of Chart 4 reflect the A.E.C.'s figures, but if the writers' figures are considered, the curves would each be nearly 3 times higher.

If all the ore mined in the period, 1955 to 1966, is assigned to peacetime uses, then there will be a stockpile for such purposes equivalent to about 185,000 tons of natural uranium by the end of 1966. Considering the early stage of research on power reactors and the time necessary to bring the experimental ideas into commercial fruition, it is fairly apparent that consumption of the nuclear fuels will lag conspicuously behind production and accumulation of them. It is estimated that the 185,000 tons stockpile of natural uranium in 1966 would supply approximately 60 years of electric power at the present U. S. generating capacity of 100 million kilowatts per year and 34 years of power supply at a capacity of 175 million kilowatts.

It appears that considerable uranium will be used in submarines and other varieties of ships, and if the number of atomic-powered vessels

Chart 4

Uranium Supply and Demand Curves



should reach one hundred, two hundred, or three hundred by 1966 then the uranium necessary to load their reactors would reach sizable proportions, and must be reckoned with in the gross economy picture. The U.S.S. Nautilus has a presumed generative capacity of 12,000 horsepower, and as such would take about one tenth the amount of uranium as a 100,000 kilowatt reactor for generating electricity. The peacetime use of uranium in powering ships and even airplanes will not be considered important here, but the factor must be added if the use increases to sizable proportions.

Effect on Coal & Gas Industries

Most nuclear physicists who have written on the subject believe it will take ten to fifteen years to develop and build any sizable power reactor capacity in the United States, so in the next 9 years a large reserve will be built up.

At best, only about 10 per cent of the electrical energy of the United States and Canada will be supplied by nuclear reactors in 1970. With the needs increasing sharply, 50 to 70 million kilowatts of new capacity must be built and fueled by coal and oil or powered by water in the next 12 years.

It has been the concern of some in the coal industry that the establishment of large numbers of nuclear power plants would make serious inroads on the projected consumption of coal. It is interesting to note that up to the present time the reverse has occurred. One tenth of the total electrical energy output of the United States is used at the present time by the A.E.C. for U^{235} separation (Nucleonics, 15, No. 10, October 1957, p. 29.) Approximately 6 million kilowatts of power were purchased by the A.E.C. last year to process a portion of the estimated 4,300 tons of U_3O_8 purchased by the government. Interestingly enough, if the 26 tons of U^{235} in this 4,300 tons of U_3O_8 were all used for power generation, it would be sufficient for a 13 million kilowatt year of power. In effect then, the U^{235} in the U.S.A. stockpile has already used up power equivalent to almost half of what it can itself produce in the future. This aspect of uranium as a fuel contrasts with that of coal because only about 14 pounds of coal are required to mine a ton of coal (Professor J.E. Willson, University of Utah).

Coal reserves in the United States which can be produced at a cost of no more than 2 times present costs, have been estimated to be the equivalent of 260 billion tons of bituminous coal ("Energy in the Future," Putnam, Van Nostrant, 1953, p. 126). Electrical energy can be produced at a rate of 1 kilowatt hour per pound of coal. If one half of the 260 billion tons of coal in the United States is used for generating electric power, 250 years at one hundred million kilowatts of power will see the last of it burned up. In terms of a predicted power generating capacity of 175 million watts in 1967, this would mean a 140 year reserve. By that time it is likely that more than half of the annual mine output will be needed for purposes other than power generation, i.e. space heating. It is apparent from these figures that the United States has a good energy supply from coal alone for at least 100 years, but for the sake of our children five generations hence, plans for our energy economy for the distant future should be made now. Uranium should be a most welcome addition to the energy supply. It is even hoped that breeder reactors will have been developed to the point where U^{238} can be utilized as an energy source on an efficient basis.

Power generating reactors will be more desirable and more likely will be built first in the nations deficient in fossil fuel or hydro-electric power resources. Therefore, the world picture will be different than our own. A fast build-up of reactors in Great Britain where coal is running out is almost a foregone conclusion. Germany has coal for a while. France has sufficient uranium to nourish a reactor building program and will probably work in that direction as finances permit. It is mostly up to Canada, England, and the United States to pilot and expense the way in reactor research for the rest of the Free World.

Future of Domestic Uranium Mining & Milling Industry

The facts seem clear that by 1966, the end of the guaranteed prices for mill concentrates, that there will be a large stockpile of metallic uranium and uranium concentrates. Our actual consumption of the amounts produced will be small. The equivalent of about 30,000 tons of natural uranium (100,000 KgU^{235}), about one sixth of the amount that will be available 9 years hence, has been made available to domestic private industry and certain friendly foreign nations. If the policies practiced in stockpiling other metals govern uranium stockpiling, Washington will see little justification of buying more.

The production curve (Chart 1) shows that 128,000 tons of the potential 132,000 tons of natural uranium will be produced in terms of concentrates by the mills now operating, building or planned and approved by the A.E.C., by the end of 1966. It seems evident that only certain companies with integrated mine and mill operations may be able to process more ore than they now have proved up, and can afford to prospect for more. But, the independent miner who discovers ore will probably not be able to sell it. Consequently, the incentive to search for uranium is largely gone. Already the uranium miners are aiming at mining out their ore bodies by 1966. Some have signified an intention of cleaning up by March, 1962. The private mills will work at capacity until 1966 with plans for amortization before then. If the A.E.C. does not extend its buying program, miners and millers will walk away from their operations carrying with them only profits and memories.

It seems completely out of the question to the writers that a market for uranium concentrate would exist if the government steps out of the market in 1966, with present provisions remaining until then. The A.E.C. has not permitted private industry to process the concentrates, and no private facilities are being developed at present. Since it is the metal, either natural or enriched, that a reactor industry will want, the stage in the metallurgical treatment that prepares

metal from concentrates, must be a part of a private industrial integration. The cost of processing must be extremely high, judging from the amount of electricity used by the A.E.C. for the purpose. With the large inventory of natural uranium on hand by 1966 one would think that the A.E.C. will wish to continue encouraging private industry to develop and build reactors and will supply the fuel for them, and if so, where will private enterprise market uranium.

Apparent Problems of the A.E.C.

The problems of the uranium industry as 1966 approaches will be somewhat the same as those of the domestic lead and zinc industry, which is critically hurt by foreign imports and low prices. For most uranium mines prices will permit profitable operation until 1966, but then from most points of view, they will fall abruptly to zero! The domestic industry thinks that the A.E.C. has been paying more for African concentrates than for its own. This, if true, is a sore spot and will fester badly if African and Canadian concentrates are purchased after our own industry is shut down.

Possibly the U.S. should cease buying and importing foreign concentrates immediately, and use the money saved to continue support of the domestic industry. The A.E.C. will have mounting pressures placed on it to this end.

Now, the A.E.C. will be dominated by our foreign policies, not only in the matter of free trade, but the much more vital one to all of us of protection against the U.S.S.R. If we do not buy Africa's uranium will it be peddled to Russia? If it does find its way in large amounts to Russia will this be bad? To protect ourselves, must we hurt ourselves? These are grave problems with which the A.E.C. must contend.

Some help in solving the dilemma may come from the realization that by 1966 the U.S.A. will have approximately two-thirds of the Free World's uranium. We will have approximately 228,000 tons of natural uranium minus, say 30,000 tons, assigned and partly consumed by that time, and the rest of the Free World about 85,000 tons. However, 85,000 tons of uranium is more than enough to supply several nations with all they would need for great armaments of nuclear weapons. And it is possible that Russia has a sufficiency from domestic production. So it may be concluded that owning two-thirds of the Free World's uranium is valuable energy stored for the future, but no protection against military aggression. For this reason the writers believe that purchases from Africa and Canada could very well be suspended immediately, and greater effort be made to help the domestic industry beyond 1966. There may be delicate matters of diplomacy and honor involved in such suspensions, which obviously will weigh heavily in the balance of government decisions affecting our uranium economy.

To avert the sudden end of a critically important industry at its peak, its members are looking to a major market outside the U.S.A. in nations lacking or poor in the conventional sources of energy. Reactors not competitive with coal in the U.S.A. or Germany, or with water in Scandinavia or Canada, will be economic and desirable in England whose coal is running out, in Italy, the Mediterranean nations, all of Africa except the south, India, the Malayan and Dutch East Indies countries, and most major nations of South America. A strong play for this world-wide market might be the salvation of the domestic uranium mining and milling industry, and also result in the growth of a large new reactor manufacturing industry.

To accomplish this the writers propose for consideration a three point program. First, the Federal Government should declare that it will retire its existing stockpile in 1966 from any threat to our immediate peacetime industrial uranium economy and hold the reserve as a future source of energy and of military support. Second, it should take steps to permit private industry to process concentrates and prepare natural and enriched uranium, or to assure private industry that the existing A.E.C. facilities are ample and that they will be used in the post-1966 period in such a way that the finding of a market and sales of nuclear fuel will not be restricted by the A.E.C. Third, it should take vigorous steps in company with industry to develop the foreign market. This presumes that the reactor development program of the A.E.C. and private industry will proceed, and that by 1966 a prototype reactor power generator will have been developed sufficiently simple, safe, and efficient to be built in quantity and set up in foreign countries.

The ramifications of the above program are many. Its costs must be weighed against its profits on the domestic scene; its advantages in foreign relations against its dangers. If these three major steps are taken, then the uranium mining and milling industry could hope that by 1966 there will be a demand for its product on the open market.

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Present Status of the Atomic Power Industry

When the lights went on in San Francisco Oct. 24, they may not have shone more brightly than usual, but they shone more significantly: their power came from the nation's first nuclear-electric station, that at the Vallecitos research center of General Electric, 40 miles east of Frisco. This station, actually just a pilot plant for the immense Dresden station G.E. is building near Chicago for a group of utilities headed by Commonwealth Edison, cost only $3 million and generates only 5,000 kilowatts of electricity. The Dresden station, scheduled for completion in 1960, is the largest all-nuclear power plant thus far planned in the U.S., will cost a minimum of $45 million, and will generate at full capacity 180,000 kilowatts.

A second nuclear-powered generating plant is to begin operating this month. Located at Shippington, Pa., and designed by Westinghouse, its initial 60,000 kilowatts of electricty will go to customers of Duquesne Light in the Pittsburgh area. This plant has a dual nature, for it also includes steam turbines for generating another 100,000 kilowatts. The turbines will be driven by steam produced by heat exchangers utilizing water passing through the core of the nuclear reactor which will heat the water to about 525 degrees.

Other nuclear power plants now under construction or definitely planned include one at Elk River, Minn., to cost $11.8 million; one at Grand Rapids, Mich., to cost $14.4 million; one planned by Consolidated Edison to cost $90 million and produce 275,000 kilowatts; that to be built by Yankee Atomic Electric Co. at a cost of around $41 million; and that to be built by a group headed by Detroit Edison Co., cost unannounced.

No Profits or Stability Yet

In view of New Mexico's vast uranium reserves (variously estimated, but set by the AEC in October at 47.7 million tons of ore economically mineable and metallurgically amenable to treatment), the health and happiness of the atomic industry are of real importance to this state. So far nobody is making any money out of atomic power; and, despite the plants now gradually coming into operation, nobody expects the industry to come of age for several years. This opinion was shared by atomic-power authorities who recently got together to observe New York's Nuclear Week. George White, general manager of G.E.'s atomic power equipment department, believes that General Electric has "a reasonable chance" to get into the black by 1961 or '62. Charles H. Weaver, vice president in charge of atomic activities for Westinghouse, feels that the industry as a whole will require several years beyond either of those dates before it can become stabilized. James Lane of the AEC warns that "the magnitude of achieving competitive nuclear power in the U. S. is greater than previously anticipated."

Chief Difficulty

The greatest present difficulty seems to be that of holding down costs of building nuclear reactors. Only two or three companies of the several currently in the field have actually built reactors, and even they--because of soaring construction costs--are experiencing real difficulties staying within their bids. In some cases, estimates have been more than doubled by the time to sign contracts.

Top men generally blame the present cost muddle on inexperience. Too often, they say, a company jumped into the business of building reactors as a way to make money in a hurry. Such haste has usually resulted in the hiring of a couple of promising young physicists to function as a nuclear department, when in most cases the young men knew practically nothing about the intricacies of power plants and so made bids that were far too low. On the other side of the

picture, prospective owners of the power plants were careless about plans and estimates.

The over-all idea seems to be that the atomic industry is presently suffering from too much original glamour and optimism, both of which are rapidly fading.

Some Optimism

However, there are those uranium producers who, according to Business Week for Nov. 30, not only are not greatly worried but "even exude optimism." It is their belief that, since the AEC's purchasing program will run to 1966, uranium production will be kept afloat until new customers are available in the form of private-power consumers. Some leaders feel that the most they have to fear is a period of transition characterized by the gradual diminution of AEC buying but also by a combination of military and peacetime uses, which not only will keep mining alive but will actually spark much additional prospecting.

Business Week quoted Gordon Weller, executive vice president of the Uranium Institute of America, as summing the situation up in this manner:

"We've got a big and profitable industry, with government cooperation promised during a nine-year transitional period. I'm darned optimistic."

The problem is one of many facets, of many questions, and--so far--of no unequivocal answers. Probably those nine years alone can fill in the blanks and determine the future of uranium mining and the atomic industry.

--*M. I. M.*

URANIUM MILLS OPERATING OR UNDER CONSTRUCTION IN NEW MEXICO, 1957

Owner	*Cost*	*Capacity* (tons per day)	*Location*
Anaconda *	(a)	3,000 [1]	Bluewater
Homestake-New Mexico	$5,000,000	750	Grants Area
Homestake-Sapin	$10,000,000	1,500	Grants Area
Kerr-McGee *	(a)	500 [1]	Shiprock
Kermac	$16,000,000	3,300	Grants Area
Phillips	$9,500,000	1,725	Grants Area

(a) Considerable expansion has made cost uncertain.
[1] Expansion has increased the capacity since this estimate was reported.
* In operation

Business Activity in New Mexico

	October 1957	Year Earlier October 1956	Per Cent Change October 1957 from Sept. 1957	Per Cent Change October 1957 from Oct. 1956	INDEX October 1957 (Average Month 1947-49 = 100)
Index of Business Activity (1947-49 = 100)	247.2	218.2	+ 3.3	+ 13.3	247.2
*Sales of Retail Stores (1,000's)	$103,612	$ 89,201	+ 2.5	+ 16.2	210.6
Apparel Stores	3,055	3,083	- 11.2	- 0.9	154.2
Automotive Dealers	25,827	25,469	+ 6.8	+ 1.4	189.4
Subsistence Stores	21,625	19,600	+ 0.2	+ 10.3	187.6
Furniture and Appliance Stores	4,300	4,094	+ 10.5	+ 5.0	169.0
Building Materials Dealers	8,452	7,815	- 2.7	+ 8.1	173.5
Other Retail Stores	40,353	29,140	+ 2.7	+ 38.5	257.7
*Sales of Amusement Establishments (1,000's)	$ 1,187	$ 955	- 43.9	+ 24.3	133.3
*Sales of Service Establishments (1,000's)	12,041	9,337	+ 11.7	+ 29.0	311.4
*Sales of Contractors (1,000's)	31,420	23,684	- 9.0	+ 32.7	459.8
*Sales of Wholesalers (1,000's)	36,541	27,982	+ 7.5	+ 30.6	180.9
*Public Utilities' and Carriers' Sales (1,000's)	13,259	12,475	- 7.0	+ 6.3	283.4
*Manufacturers' and Processors' Sales (1,000's)	17,436	19,823	+ 30.7	- 12.0	232.6
*Life Insurance Sales (1,000's)	19,022	14,971	- 3.6	+ 27.1	542.4
*Bank Debits, 35 banks (1,000's)	$405,102	$380,015	+ 9.9	+ 6.6	255.4[a]
Bank Loans and Discounts, 35 banks (1,000's)	37,000	33,215	+ 6.3	+ 11.4	222.5[a]
Demand Deposits, 35 banks (1,000's)	300,381	295,164	+ 2.5	+ 1.8	163.0[a]
Time Deposits, 35 banks (1,000's)	95,602	86,514	+ 0.8	+ 10.5	272.9[a]
Business Failure Liabilities (1,000's)[b]	42	42	+322.5	+ 1.2	147.6
Postal Receipts	na	na	na	na	na
Number of Workers in Nonagricultural Establishments	210,200	200,400	+ 0.7	+ 4.9	159.6
in Manufacturing	22,000	20,000	+ 2.8	+ 10.0	221.8
in Mining	16,600	16,600	- 3.5	0.0	144.1
in Transportation and Utilities	20,400	20,200	- 1.4	+ 1.0	135.9
in Trade	45,700	44,100	- 0.9	+ 3.6	153.8
in Finance, Insurance and Real Estate	7,700	6,700	+ 2.7	+ 14.9	262.4
in Services and Miscellaneous	25,800	23,900	- 0.4	+ 7.9	120.2
in Government	56,300	52,800	+ 4.1	+ 6.6	197.3
in Contract Construction	15,700	16,100	- 0.6	- 2.5	124.2
*Building Permits, total 15 cities (1,000's)	$ 3,624	$ 4,124	- 43.8	- 12.1	151.0[a]
Residential	2,173	2,455	- 50.1	- 11.5	146.5[a]
Nonresidential	962	1,026	- 41.7	- 6.2	147.6[a]
Other	489	643	+ 10.6	- 23.9	184.6[a]
*Petroleum Production (1,000's of bbls)	7,689	7,485	+ 4.8	+ 2.7	202.7
Natural Gas Production (millions of cu ft)	66,669	54,501	+ 6.7	+ 22.3	414.5
*Electric Power Production (1,000's of kwh's)	220,528	197,670	- 0.5	+ 11.6	249.9
*Index of Total Metallics Production (1947-49 = 100)	59.5	104.3	- 24.6	- 42.9	59.5
Mine Production - Copper (1,000's of lbs)	6,600	10,622	- 36.0	- 37.9	62.4
Mine Production - Lead (1,000's of lbs)	500	1,152	- 1.2	- 56.6	48.2
Mine Production - Zinc (1,000's of lbs)	3,400	7,096	+ 0.4	- 52.1	53.2
*Mine Production - Potash (1,000's of tons)	1,153	1,073	+ 4.3	+ 7.4	287.9
Index of All Farm Prices (1947-49 = 100)	96.2	85.9	0.0	+ 12.0	96.2
Index of Livestock Prices	98.0	82.9	- 0.3	+ 18.2	98.0
Index of Crop Prices	99.6	100.4	+ 1.6	- 0.8	99.6
Receipts from All Farm Marketings (1,000's)	na	na	na	na	na
Livestock and Products	na	na	na	na	na
Crops	na	na	na	na	na

	November 1957	Year Earlier November 1956	Per Cent Change November 1957 from Oct. 1957	Per Cent Change November 1957 from Nov. 1956	INDEX November 1957 (Average Month 1947-49 = 100)
Bank Debits, 34 banks (1,000's)	$373,277	$352,421	- 6.2	+ 5.9	239.6[a]
Bank Loans and Discounts, 34 banks (1,000's)	33,994	31,545	- 6.2	+ 7.8	208.7[a]
Demand Deposits, 34 banks (1,000's)	302,844	292,705	+ 2.8	+ 3.5	167.6[a]
Time Deposits, 34 banks (1,000's)	94,425	84,759	+ 2.0	+ 11.4	278.4[a]
Postal Receipts	na	na	na	na	na
Building Permits, total 15 cities (1,000's)	$ 7,018	$ 5,131	+ 93.7	+ 36.8	292.4
Residential	3,864	3,038	+ 77.9	+ 27.2	260.5
Nonresidential	2,609	1,626	+171.1	+ 60.5	400.2
Other	545	467	+ 11.4	+ 16.7	205.7
Index of All Farm Prices (1947-49 = 100)	95.2	83.4	- 1.0	+ 14.1	95.2
Index of Livestock Prices	97.0	79.2	- 1.0	+ 22.5	97.0
Index of Crop Prices	97.6	101.6	- 2.0	- 3.9	97.6

*Indexes for these items are used to compute the Index of Business Activity.
[a]Although the number of reporting units changes, the indexes for these items are comparable with indexes for preceding months.
[b]The figures in this series are based on the average of three month's data.
na Not available

Sources:
Retail Sales data: N. M. Bureau of Revenue
Potash Production: N. M. Bureau of Revenue
Petroleum and Natural Gas Production: N. M. Oil Conservation Commission
Life Insurance Sales (New Ordinary): Life Insurance Agency Management Association
Wage Employment (all categories): N. M. Employment Security Commission
Electric Power Production: Federal Power Commission
Metallics Production: U. S. Bureau of Mines
Farm Prices and Marketings: U. S. Agricultural Marketing Service
Bank data (all series), Postal Receipts, Building Permits: Bureau of Business Research
Business Failure Liabilities: Dun & Bradstreet, Inc.

Monthly Summary (Continued from Page 1)

The uncertain national outlook affected New Mexico in another way. The severe cut-back in metallics production reflects falling prices for copper, lead, and zinc.

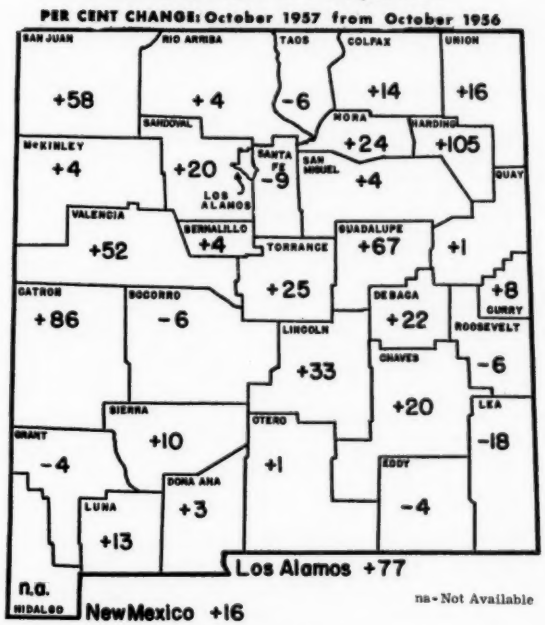
The other segments of New Mexico's mining industry marked up continuing substantial gains in October. How long the trend will continue is questionable in light of accumulating oil stocks, curtailments in Pacific Coast industrial production (large user of our natural gas), the impact on uranium mining of the re-oriented AEC policy, and uncertainties facing agriculture (largest user of our potash).

Construction activity, cause of much concern over business conditions nationally, continued at an exceptionally high level here, with contractors' sales exceeding those in all other postwar months except May and September 1957. This high level largely resulted from the expanded highway program. Building construction during the first 11 months of 1957 barely held to its 1956 level.

Despite apparent weakening in mining, building construction, and manufacturers' sales, over-all employment gains continued at about their average postwar rate.

RETAIL SALES: A Comparison

PER CENT CHANGE: October 1957 from October 1956



na - Not Available

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Sales Activity in New Mexico Counties

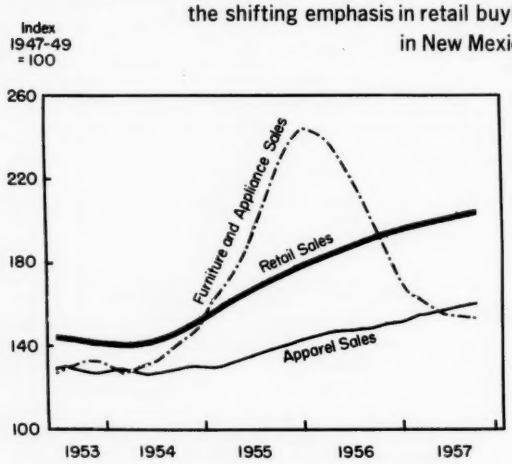
October 1957

(add 1,000's)	Retail Stores							Others		
County	Apparel	Automotive	Subsistence	Furniture & Appliances	Building Material	Other	Total	Amusement Places	Service Firms	Manufacturers & Processors
Bernalillo	$1,180	$ 4,773	$ 6,043	$1,572	$3,126	$ 8,883	$ 25,577	$ 242	$ 4,425	$ 2,006
Catron	0	126	42	2	6	43	219	2	1	30
Chaves	203	1,295	1,289	213	1,029	2,450	6,479	157	685	490
Colfax	30	408	420	18	102	417	1,395	17	115	91
Curry	155	712	637	128	222	779	2,633	63	497	150
De Baca	(a)	113	60	4	24	164	365	(a)	27	(a)
Dona Ana	120	982	953	132	418	1,137	3,742	64	406	1,643
Eddy	214	947	1,148	192	373	2,306	5,180	67	1,065	4,246
Grant	34	320	441	71	96	611	1,573	19	164	105
Guadalupe	13	383	187	(a)	45	202	830	1	8	(a)
Harding	0	91	15	0	2	79	187	1	3	25
Hidalgo	8	3,677	153	10	45	145	4,038	5	26	3
Lea	229	1,824	1,432	347	411	3,814	8,057	113	862	2,496
Lincoln	8	170	228	11	61	220	698	12	45	5
Los Alamos	18	113	247	7	5	261	651	27	95	61
Luna	59	440	334	32	63	267	1,195	13	87	47
McKinley	39	730	625	80	161	1,108	2,743	32	225	2,271
Mora	2	62	16	0	(a)	83	163	2	6	18
Otero	116	482	742	195	135	775	2,445	36	232	202
Quay	51	496	332	43	84	294	1,300	23	100	33
Rio Arriba	13	284	254	46	45	474	1,116	3	83	55
Roosevelt	31	377	291	93	209	283	1,284	20	209	43
Sandoval	(a)	115	172	0	2	216	505	(a)	13	1
San Juan	163	3,284	1,457	174	736	3,241	9,055	93	606	1,288
San Miguel	11	304	309	39	81	334	1,078	19	106	29
Santa Fe	186	788	1,139	172	391	1,594	4,270	47	727	245
Sierra	2	167	177	17	30	124	517	10	49	21
Socorro	12	237	194	27	29	193	692	(a)	34	52
Taos	11	133	242	60	29	243	718	6	64	92
Torrance	(a)	242	113	21	15	190	581	1	26	0
Union	22	237	131	19	40	170	619	8	41	4
Valencia	70	784	611	62	201	687	2,415	6	149	57
Unallocated	55	731	1,191	513	236	8,566	11,292	78	860	1,629
Total	$3,055	$25,827	$21,625	$4,300	$8,452	$40,353	$103,612	$1,187	$12,041	$17,438

(a) Less than $1,000
Source: School Tax Division, N. M. Bureau of Revenue

CHART-OF-THE-MONTH

Changing patterns of consumption show up in the shifting emphasis in retail buying in New Mexico.



Total retail sales have grown steadily, but sales of furniture and appliances first shot away up and then dropped abruptly. Apparel sales, although lagging behind the total, have continued to gain, while furniture and appliance sales have declined.

Volume 10, Number 12

New Mexico Business Is Published Monthly By The Bureau of Business Research College of Business Administration
University of New Mexico, Albuquerque

Subscription Price Two Dollars Per Year

Entered as second-class matter January 31, 1949, at the post office at Albuquerque, New Mexico, under the act of August 24, 1912.

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